Is Economic Theory Wrong About Human Nature?

Pauline Vailancourt Rosenau  
*UT Houston - School of Public Health Houston, Texas USA*

Follow this and additional works at: [http://epubs.scu.edu.au/jesp](http://epubs.scu.edu.au/jesp)

Recommended Citation

Is Economic Theory Wrong about Human Nature?

Pauline Vaillancourt Rosenau
Management and Policy Sciences
UT Houston - School of Public Health
Houston, Texas USA

Abstract

Traditional economic models assume that all individuals share the same self-oriented life perspective. The new economics suggests, on the basis of different methodologies, that this is unlikely. These challenges to traditional economic views of human nature are summarized under four substantive topic areas (trusting, bonding, and empathy; altruism and cooperation, community orientation and accommodation; fairness and reciprocity; and rationality). Laboratory experiments indicate that a majority of us are contingent cooperators, trusting and willing to give others the benefit of the doubt — at least initially. Very few people are selfish chronic free-riders (20-30 percent). The rational-calculating and absolutely consistent Homo economicus is largely a myth. This has enormous implications for policy and society.

Introduction

Historically, economic and social policy has been informed by classical, Keynesian, welfare, and supply-side economic theory. While there has been much debate about the assumptions of these theories in the past, it has been largely subjective and normative, dependent on opinion rather than direct evidence. Today, basic research in a number of fields is giving rise to new specialties in economics. The findings from this research question the adequacy of many traditional economic assumptions. They point to the need for reasonable new approaches to economic and social policy in all fields. In short, taken together, the body of emerging research on economic behavior constitutes a paradigm shift of significant importance.

1 Received 17 August 2004, revised 1 March 2005, accepted 4 April 2005.
Traditional Economics

Adam Smith's *Wealth of Nations*, first published in 1776, lays out the basis for modern - and largely untested - economic theory. In his earlier *Theory of Moral Sentiment* he wrote of the need for an individual to consider the 'welfare of the whole society of his fellow-citizens' (Smith 1759, part 6). But modern economics has focused on his *Wealth of Nations*, interpreting him as saying that it would be optimal if each individual, family, and business pursued its own self-interest. This would, then, thanks to the mechanism of the invisible hand, maximize the success of the economy. In short, aggressive individual selfishness and business profit-maximizing make for the general welfare, the common interest, and social progress (Smith 1776). Darwinian natural selection would lead to improvement and progress in the world of business just as it did in the animal kingdom. By extension, individual liberty is best maximized and government interference with the process of competition is best minimized. It is also essential to the model that individuals be rational as consumers in assessing their own self-interest (Rice 1997, p. 6). Economic behavior is based on preferences and is relatively constant over time. Individuals will ultimately maximize their expected utilities. Economic theory assumes that everyone will 'free ride' if given the opportunity. It suggests that human beings are all willing to let someone else do the work and then take credit for it. It takes for granted that consumers respond to price and wage changes and that they will evaluate their options and consistently act to maximize their choice based on self-interest defined in terms of their preferences. Actors are assumed to be individually-oriented and inherently uncooperative.

Criticisms of classical economic theory are common but they are seldom about fundamental assumptions and, therefore, do not present a serious challenge to the field as a whole. In any case, small deviations from a theory are not considered by mainstream economists to be a problem. They often acknowledge that 'perfect competition' is exceptional. Despite the fact that the basic model of market competition is unrealistic, it remains in place, though other alternative models sometimes fit the data employed by economists much better (Stiglitz 1997, pp. 29-30). In short, critics have been rare when it comes to the unquestioned assumptions economists make about human nature (Richerson & Boyd 2001).

Serious challenges to traditional, mainstream economic models come from the new approaches to economics in the fields of biology, neuroscience, anthropology, psychology, and sociology. They suggest that major revisions
are needed because traditional economic models are poor predictors of human economic behavior. This paper briefly summarizes and reviews the methodologies, explanatory models, and substantive findings of the 'new economics' - it points to the policy consequences of the new economics. These contributions are of sufficient importance to merit the development of new, trans-disciplinary sub-specialties in economics, including the fields of neuro-economics, bio-economics, psycho-economics, evolutionary economics, experimental economics, behavioral economics, behavioral finance, ecological economics, environmental economic, and ethico-economics.

**Methodological Challenges**

Innovative methodologies increasingly confront the old economics with its emphasis on analytical tools, verbal accounting, and mathematical equations. Historically, economists have worried about heteroscedasticity, autocorrelation, and collinearity. Their favored techniques of analysis include regression, functional forms, specialized tests, simultaneous equations, and estimations.

The new economists, discontented with traditional approaches, note methodological inadequacies relating to the absence of evolutionary processes, geography, innovation, and technology (Pajares, Hernandez-Iglesias et al. 2004). The new economics does not abandon the old methodologies; it moves beyond them.

The new economists look to methodologies that use computer science and are consistent with concepts in cognitive science, artificial intelligence, and general psychology. They employ techniques of simulation, field data, modeling, multi-agent systems, several types of game theory, and ad hoc learning. Their array of methods also includes hormone analysis based on drawn blood samples as well as neuro-radiology to map brain activity and neural networks. Beginning with the work of Nobel Prize winner, Vernon Smith, they integrated laboratory experiments into their research methodology. These techniques offer the possibility of close control over what is being measured and tested.

Some of the most important findings of the new economics involve three games: Prisoner's Dilemma, the Ultimatum Game, and the Dictator Game. According to the Norton College Dictionary, the Prisoner's Dilemma game is structured such that the 'non-cooperative pursuit of self-interest by two parties
makes them both worse off. In cases where one person defects and the other continues to cooperate, the person who defects gains more than if she or he had cooperated. In the Ultimatum Game, two people, ‘Allocator’ and ‘Recipient,’ are asked to split $10. Allocator must make a one time offer to the other player. Recipient can either accept or reject this offer. If she or he accepts it they both keep the proceeds. If Recipient rejects the offer, neither gets to keep anything. In the Dictator Game there are two players. The first player proposes a split and decides, for example, to keep $9. The recipient then gets $10-$9 = $1. In this game, the recipient must accept the amount offered, no matter what is proposed. The Dictator Game measures the extent of altruism using gift-giving.

Methodological developments in the new economics include advanced technology never before available. The use of brain scans to understand human emotions and behavior is in its infancy but the potential is impressive. These techniques are already popular for marketing and product development (Thompson 2003), but there is also substantial research potential for analyzing brain activity associated within a wide range of basic economic and policy topics. For example, activity in certain areas of the brain is now known to be associated with specific emotions, making it possible to distinguish between rational-calculation and affective feelings. It is increasingly clear that economic decisions are not only taking place in the brain centers associated with rational-calculation; they also involve the emotional areas of the brain (Zak 2004). In the near future hyper-scanning will permit neuro-economists to watch how two people's brains interact during episodes of communication (Montague, Berns et al. 2002).

Substantive Challenges

Challenges to traditional economics are not new. Serious questioning of economic theory from within, using traditional methodologies of logic and intellectual consistencies, are common. Some of them bridge the old and new economics. For example, basic human emotions, what Amartya Sen calls sympathy and commitment, are central to individual choices about economic decision. The fact that emotions influence economic behavior undermines assumptions that such decisions are always rational, calculated, and based on selfish personal preferences. Sen argues that codes of moral behavior exist and that they distort the calculations that go into making a 'rational' decision (Sen 1982). Tom Rice similarly points out that concepts such as cognitive dissonance call into question the idea that people act in a rational manner, 'that
is, make decisions that truly maximize their utility' (Rice 2002, p. 92). Kahneman, Knetsch, and Thaler suggest community fairness norms may influence behavior of firms as regards raising prices (Kahneman, Knetsch et al. 1986). Frank points out that human interdependency means that individuals cannot, and will not, act exclusively on the basis of personal preference (Frank 1985).

Today, a growing body of evidence from the new economics testifies to the need to modify the view of human nature implicit in traditional economics. These more serious challenges come from outside mainstream economics altogether. Accommodating the new economists' views of human nature would complicate the field of economics and its theoretical underpinnings; but it has the potential to increase predictability and improve its explanatory powers.

**Trust, Bonding, and Empathy**

Traditional economic theory ignores concepts like trust, bonding, and empathy. For example, the *Nash Equilibrium* predicts that rational human beings will not trust one another. But laboratory experiments demonstrate that there is a neuro-physiological basis to trust. It is a physiological attachment mechanism commonly observed in mammals and might well be the result of evolved survival mechanisms (Nesse 2001).

Research in the field of neuro-economics suggests that trust between individuals is surprisingly common. The *Investment Game* illustrates this point. An individual, A, has the opportunity to send all or none or any part of a ten dollar gift to another person, B, who they do not know. The amount sent will be tripled for player B who can then, if she or he wishes, return part of the gain to player A. While modern economics predicts that player A will not trust player B, in fact, in the experiments, A almost always sends money to B. Economic decisions are not just based on individual utilities – many of us are too closely attached for this to be the case. Here another illustration is helpful: research using brain scans shows that individuals who are emotionally close suffer pain when their friend or spouse is administered a small electrical shock by an experimenter (Singer, Kiebel et al. 2004).

People in groups where trust is high respect agreed-upon rules of the game and reciprocate when granted favors; cooperative arrangements are more common, based on community level connectedness. One example is the microfinance institutions and fisheries involving 8-15 million households world wide (Pretty 2003). They are of long term benefit to the economy. Another example: trust-
based collective management has been found to be more effective than the unlimited pursuit of individual self-interest in protecting the environment. Bonding and empathy are relevant to understanding the process behind the development of social capital defined as 'social bonds and shared norms'. It is high in groups that are well-organized, perhaps because social capital lowers the transaction costs between the members of a group (Ostrom 1990).

Trust is essential to economic exchange but traditional economic models do not have the intellectual infrastructure to incorporate the emotional into economic policy. The new economics shows that to do so is essential if models are to be adequate predictors. Data suggests that a society that is low on trust is very likely to be caught in a 'poverty trap'. High trust societies have 'higher rates of investment and growth' (Zak & Knack 2001). It is also probable that low trust causes poverty rather than vice-versa (Zak 2003).

**Altruism, Cooperation, Community Orientation, and Accommodation**

Traditional economics assumes that most people are selfish – not altruistic and cooperative. They say that faced with a *Prisoner's Dilemma* type situation (explained above) in laboratory experiments people should or would defect. If this is the dominant strategy, and if defectors get the biggest payout, then 'by virtue of their higher payoffs, defectors would eventually drive cooperators to extinction -- hence the standard conclusion in behavioral biology that genuine cooperation or altruism cannot survive in competitive environments' (Frank 2001, p. 61). Economists see it this way: 'Cooperators help others at a cost to themselves, while defectors receive the benefits of altruism without providing any help in return' (Nowak, Sasaki et al. 2004, p. 646). But this theoretical conclusion may be based on narrow contextual circumstances that do not reflect the real world.

In fact, research by the new economists shows that a surprisingly large proportion of humans are altruistic, cooperative, and community oriented. They regularly perform acts of generosity that are not self-serving and do not yield immediate personal benefit. Between 20 and 30 percent of subjects in experiments behave as economists predict – they are largely selfish free-riders (Fehr & Gachter 2000, p. 157; Fischbacher, Gachter et al. 2001). But slightly over 50 percent are contingent cooperators. These cooperators give the benefit of a doubt to those they interact with – at least initially. It is a cognitive predisposition that is present in many people even in the absence of reward (Brandts & Schram 2001). This has been found to be the case using outcome measures of laboratory experiments and it has been confirmed by analyzing brain patterns of human subjects (McCabe, Houser et al. 2001).
As with trust, the new economists' research results concerning altruism and cooperation go against traditional economic theory. Rather than leading to a revision of economic theory, this divergence has given rise to a debate about what accounts for the observed cooperative behavior. The argument offered is that such altruistic and cooperative behavior is ultimately self-interested or rational because the recipient gets something from it in the end, even though the reward may be remote and non-obvious. Traditional economists hold that altruism and reciprocity are compatible with the rational actor model. They also argue that altruistic behavior can be attributed to mistakes or confusion in reasoning (Ostrom & Walker 2003, see this edited book for some examples).

New economists say that there may well be an evolutionary advantage to cooperation 'even when immediate and tangible pay-offs are absent, insufficient or sub-optimal'. Psychologists support them; cooperative relations set the stage for future individual and group survival (Schuster 2004, p. 261). If many individuals in a group pursue cooperative strategies, these groups may do better than groups where most individual members are self-interested. For example, it might well be the case that cooperators make more effective parents; this would give a survival benefit to groups with many cooperative individuals. Historically, a 'fitness enhancement … might have compensated for the initial costs of an indiscriminately sympathetic posture toward unrelated individuals' (Frank 2001, p. 71).

Cultural evolution and theories that are described as 'gene-culture co-evolution' also offer plausible explanations for altruistic and cooperative behavior (Gintis 2003). If altruism emerges and if it is sustained in a community, it is not possible for it to be exploited by defectors. Mathematicians have modeled how a single cooperator employing a 'tit-for-tat' strategy can influence a situation so that cooperation becomes dominant in a group through the process of natural selection (Nowak, Sasaki et al. 2004). From an evolutionary perspective, there may be a selective advantage that accrues to groups that actually punish cheaters and reward cooperative behavior (Bowles & Gintis 2000; Fehr, Fischbacher et al. 2002; Pagel & Mace 2004; Gintis 2000). Altruistic punishment is discussed below. There are, of course, variations with regard to results depending on game form, spatial structure, and size of the group (Taylor & Day 2004).

New evidence sheds light on why community orientation and cooperative behavior sometimes takes precedence, in the long term, over individual self-interest. This new evidence directly addresses the arguments advanced by skeptics who say altruistic behavior in the end, is always self-interested. *First*, laboratory experiments show that people cooperate not just with family or
those genetically related, but also with perfect strangers that they are unlikely
to interact with again in the future (Fehr & Gachter 2002; Grimes 2003).

Second, research based on brain imaging during episodes of observed
reciprocity and trust suggest that it is authentic, rather than merely due to
ulterior motives of rational calculation (Singer, Kiebel et al. 2004). Neuro-

economists conclude, using experiments conducted with MRI-monitored
subjects, that the human brain is 'hard wired' to accommodate rather than
compete (Rilling, Gutman et al. 2002; Sanfey, Rilling et al. 2003). Partners
experience positive feelings when cooperating with another equally
cooporative person and it is not rational calculating areas of brain activity that
are involved. Mutual cooperation has been found to be associated with
'consistent activation in brain areas that have been linked with reward
processing;' ie, the emotional rather than the rational-calculating parts of the
brain. This sensation, feeling, or sentiment may stave off the temptation to act
in a more selfish manner even when selfishness is the most rational choice
(Rilling, Gutman et al. 2002).

Fairness and Reciprocity: Retaliation and Altruistic Punishment

Behavioral economists have discovered that in specific, identifiable situations
fairness concerns trump self-interest and profit maximization (Henrich, Boyd
et al. 2001; Carmer 2003). These findings apply in a wide variety of societies
and cultures (Henrich, Boyd et al. 2004). Preferences and a sense of what is
right, wrong, or just plan 'fair' have more to do with economic behavior than
mere distributional material payoff (Falk, Fehr et al. 1999; Falk, Fehr et al.
2000). In addition, preferences are not inherent in some sense, but rather social
and 'shaped by the economic and social interactions of everyday life' (Henrich,
Boyd et al. 2001, p. 77). For example, contributions to the public good have
been found to be influenced by social interactions with neighbors at least for
90 percent of subjects in a group (Falk, Fischbacher et al. 2003). And another
example: perceived fairness of procedures plays a role in how people react to
authoritative decisions including economic policies (Hibbing & Alford 2004).

The concept of fairness is absent from traditional economics but it influences
economic behavior substantially. At least that is the conclusion emerging from
experiments conducted by researchers in the last several years who find that
fairness values sway behavior. In the Ultimatum Game, Allocators generally
offer 40-50 percent of 'the available money to the other person and
Responders reject low offers with a high probability' (Fehr, Fischbacher et al.
2002). The amount of money involved is not trivial and fairness concerns
remain important even when the stakes amount to between to 2 or 3 times a
monthly wage (Fehr, Fischbacher et al. 2002).
That *Homo economicus* is fairness-oriented should be no surprise. Even in the animal kingdom fairness norms have been observed (de Waal & Berger 2000). Researchers hypothesize that there may be 'early evolutionary origins of inequity aversion' (Brosnan and de Waal 2003). In situations of equal effort, capuchin monkeys were found to reject offers of rewards (cucumbers) that were lower in value to those offered to monkeys in neighboring cages (grapes). Hauser et al. found that altruistic food giving occurred more frequently among Tamarin monkeys when it was reciprocal. These animals 'discriminate between altruistic and selfish actions, and give more food to those who give food back' (Hauser, Chen et al. 2003, p. 2363).

The new economists find that what is considered to be fair and unfair in market competition and society is not a universal standard, but rather, is influenced by subjective factors. It varies from person to person (Fischbacher, Fong et al. 2003) and is, in part, cultural. Experimental laboratory games conducted in different countries and cultures document that what is considered fair differs from place to place and between cultures around the world (Henrich, Boyd et al. 2001). Studies comparing free-riding or 'social-loafing' among MBA students in China and the US found such behavior far less likely to occur in China where cultural norms discourage it (Latane, Williams et al. 1979; Earley 1989)

*Strong reciprocity* is part of a fairness ethic. It is defined as 'the predisposition to cooperate with others and to punish non-cooperators at personal cost' (Sanchez & Cuesta 2004, p. 1). A different term, *social* reciprocity, functions along the same lines (Carpenter & Matthews 2003). The concept of *altruistic punishment* is closely related; it means 'that individuals punish, although the punishment is costly for them and yields no material gain' (Fehr & Gachter 2002). Neuro-economists do, however, find that psychological satisfaction results from this type of altruism (Fehr & Rockenbach 2004; J.-F. de Quervain, Fischbacher et al. 2004).

Despite the fact that what is fair and not fair varies from culture to culture somewhat, experiments on fairness-related orientations, conducted in many different circumstances, consistently show that overall 'people tend to behave pro-socially and punish antisocial behavior, at a cost to themselves, even when the probability of future interactions is extremely low, or zero' (Gintis 2000, p. 177). Experiments in the laboratory indicate that people are willing to give up money to reduce perceived inequities (Zizzo & Oswald 2001; Fehr & Rockenbach 2003). Even uninvolved third parties, whose economic payoff is unaffected by societal or group violations of equality distribution and cooperation norms, are observed to sanction violators (Fehr & Fischbacher
Cooperation is enforced through a range of devices, processes and techniques – directly and indirectly (Masclet, Noussair et al. 2003). In so doing, they are enforcing norms that create a group culture that does not tolerate free-riding (Fehr & Gachter 2000). Most importantly, punishment of non-cooperators appears to lead to universal cooperation (Fehr, Fischbacher et al. 2002).

**Rationality: It's Hormonal, Emotional, and Intellectual**

Traditional economics assumes that rational economic agents are engaged in decision-making with perfect information. They are assumed to be trying to maximize their individual expected utilities. Research by the new economists reports that it is not so much rational as it is influenced by social and emotional factors (Kahneman & Tversky 2000; Zak & Knack 2001). Outcomes regarding spending decisions, for example, are often a function of impulse and instinct. Human motivation is complex and subjective. Several examples from a wide range of situations suggest this to be the case. In a family structure, the number of boy and/or girl offspring influences how much is invested in housing and how many hours per week a father puts in on the job (fathers put in more hours if they have sons) (Leonhardt 2003). Another example from the new economics is the finding that people dislike losses more than they appreciate gains. Most humans are, in short, loss averse and this drives decisions, be they economic or health related (Tversky & Kahneman 1992). In forced choice situations, would one sacrifice a life if this assured that five lives would be saved in an emergency situation, assuming that the five were in great jeopardy? The answer, research suggests, depends on if that one person is a friend, or geographically proximate, compared with the five people who are far away and unknown to the decision-maker. The choice is often emotional and has been documented to be so by MRI studies of the subjects' brain patterns during the course of making such decisions (Begley 2004).

Behavioral economists find incidental emotions from one life-situation can influence economic transactions in completely unrelated situations. Several research examples illustrate this case. This gives rise to the 'endowment effect' where people ask a higher price for an item that they own, compared to what they would be willing to pay for the same item if they were about to purchase it from a stranger. Another example of the same principle reveals that people like to have options and choices and that it takes considerable monetary incentives to convince them to give this up (Ahlert & Cruger 2004).

Traditional economic theory predicts that stock traders are 'omniscient and coldly logical beings, who aim always to maximize their profits based on
complete knowledge about what the entire market is doing' (Ball 2003). However, Farmer, et al., while modeling agent behavior with data from the London Stock Exchange, found that the observed action patterns were so complex and varied that they resembled random choice more than anything else (Farmer, Patelli et al. 2003). Traders attempt to guard against their own emotional tendencies but in general they fail this test (Anonymous 2004). Psychologists Daniel Kahneman and Amos Tversky propose a theory of 'irrational' economic behavior: their Prospect Theory holds that psychological orientations influence people's choices under conditions of uncertainty (Kahneman & Tversky 1979). Economic decisions are more often short-term than long-term oriented. We tend to discount future rewards in favor of the short term (Ainslie 1992). People tend to prefer the lower benefit now over a greater reward later, perhaps because it is nearer and more certain. 'A bird in the hand,' it appears, is valued more than the 'two in the bush'.

Psychological factors such as 'representative thinking' and 'categorization' influence economic choices. Representative thinking is the assumption that the past represents future trends. For example, if the stock market is going up it will continue to do so. And an example from public health: after a prolonged period of no epidemics, people forget to be vaccinated. If a movie star or the president has a certain medical problem, it becomes 'an epidemic' as people ask their doctors to check if they, too, might be ill in the same way. Categorization means people jump to conclusions on the basis of previous experience and incomplete data. When someone has lung cancer, people jump to the conclusions that she or he must be a smoker.

Finally, experimental economists, bio-economists, and neuro-economists have discovered that 'rational' strategies are influenced not merely by intellectual analysis or selfish calculation but also by hormones such as oxytocin. These hormonal effects vary across the population and sway human decision-making (Zak 2001; Zak & Knack 2001; Zak 2003). Sadness seems to make people accept higher prices and to purchase more than they ordinarily would (Lerner, Small et al. 2004).

**Conclusion**

Overall and in sum, the new evidence from these subspecialties that combine economics with other social and medical sciences calls into question the views of human nature implicit in classical economic theory. Their relevance for economic and social policy is just beginning to be understood. The new
economics challenges the idea that the economic preferences of every individual are logical, stable, systematic, and consistent. It concludes that greed and selfishness are not universal human characteristics. It uncovers substantial variation regarding human motivation where traditional economic models permit few exceptions to generalizations about the incentives that drive us. It points to the enormous implications of group reference, context, culture, and time frame for economic decisions and human behavior in general.

What does it matter if standard economic assumptions about humans being as basically ruthless and self-interested are wrong (Frank 2003)? Today's social institutions in western industrialized countries are structured and organized around the assumption that people are all basically selfish. If, as this new research suggests, most people are willing to forgo their individual interest in favor of better outcomes that work for all, then the appropriateness of these currently-in-place social structures is in question. What is the cost of organizing social institutions to fit the minority that are unable to trust others, always out for themselves at the expense of the larger society, incapable of fairness (equity and reciprocity), and unconcerned by community needs?

Can anything be done or should anything be done to change the views and behavior of the ruthlessly selfish? Have we all become so accustomed to dealing with highly self-interested individuals that we have come to accept it as the norm? Does this type of behavior become a self-fulfilling prophecy (Frank 2005)? Certainly school curriculum seems to be effective in teaching individuals to be selfish or altruistic though, of course, one may be so without formal education to a particular orientation. For example, long ago research showed that students majoring in economics are more likely than students in other disciplines to learn a selfish, free-riding, and uncooperative orientation towards others (Marwell & Ames 1981) (Yezer, Goldfarb et al. 1996) (Frank, Gilovich et al. 1993). What would be the consequences of an educational program that sought to teach community orientation and empathy with others? Would a city or country be vulnerable if it chose to educate its citizens to be less selfish while its neighboring cities or countries did not do so (Rosenau 2003, pp. 185-87)? There is some evidence that at the level of the nation-state, those states that play fair, that do not initiate conflict, or that refuse to join in alliances with states that do instigate conflicts, survive and even prosper in an environment where many other states act in a self-interested manner (Cusack & Stoll 1994; Stoll 1998). All this suggests that the assumptions implicit in modern economics regarding human nature may be well off the mark.
References


